

Dietary Arsenic Toxicity in Subadult Rainbow Trout: Growth Effects, Nutrient Absorption, and Tissue Bioaccumulation.

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Dietary arsenic toxicity in subadult (~200 g.) rainbow trout was evaluated in a 70 day test using arsenic-spiked pellet diets containing 50, 104 and 162 ppm arsenite. All organisms in all treatments survived the exposure. Dose dependent effects on percent weight gain, with commensurate changes in feed conversion and efficiency, were noted in all arsenic-spiked diets. Growth, as measured by standard length, was similarly affected in a dose-dependent manner. Chromic oxide was also spiked into all pellet diets at a concentration of 0.3% and was used as a marker for measuring absorption of gross lipid and protein in the contaminated diets. Weekly fecal samples were collected to detect changes in nutrient digestion throughout the 10 week exposure. Little to no changes in protein absorption was noted throughout the exposure period. However, while lipid absorption was similar for the first 4 weeks across all treatments (91-94%), they subsequently decreased progressively in arsenite-spiked treatments through the end of the experiment to as low as 80% in the higher doses. Liver, kidney, pyloric caecum, gall bladder and muscle tissue were harvested at the termination of the study allowing calculation of tissue-specific bioaccumulation factors. Findings are discussed in the context of previous studies of arsenic effects and the potential for developing residue-based assessment approaches.